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Event Structure of Inalienable Possession in Korean

Satoshi Tomioka and Chang-Yong Sim

1 Introduction

In Korean, more than one NP can surface with the accusative case marker *-lul*.¹ The two accusative case marked NPs have the inalienable possession (IAP) relation.² This relation holds between body-part nouns and human possessors (1a), non-human animate possessors (1b), or inanimate possessors (1c).

- (1) a. Vampire-ka Buffy-lul son-lul ttayli-ess-ta.
vampire-nom Buffy-acc hand-acc hit-past-decl
'The vampire hit Buffy on the hand.'
- b. Annie-ka robot-lul pal-ul palp-ass-ta.
Annie-nom robot-acc foot-acc step.on-past-decl
'Annie stepped on the robot's foot.'
- c. Chelswu-ka sap-ul caru-lul cap-ass-ta.
Chelswu-nom shovel-acc handle-acc grab-past-decl
'Chelswu grabbed the handle of the shovel.'

In addition, the two accusative-marked NPs do not form a single constituent. For instance, a postpositional phrase, such as *in the car*, or an adverb like *always*, may occur between them, as illustrated below:

- (2) Yoda-ka Leia-lul cha-ese nul son-ul cap-ass-ta.
Yoda-nom Leia-acc car-at always hand-acc grab-past-decl
'Yoda always grabbed Leia by the hand in the car.'

¹The markers *-i* and *-ka*, *-ul* and *-lul* alternate depending on their phonological environments: *-i* and *-ul* are used after a consonant and *-ka*, and *-lul* after a vowel.

²It is not the case that all the multiple accusative patterns are of the IAP type. For instance, a set relation is established between two accusative marked NPs in (i): *Cigarette* is a super set and *Marlboro* is a subset. Since the superset NP is a sentence-internal topic and the subset NP is an argument, this construction is syntactically and semantically different from the IAP. See Sim (2003) for discussion.

(i) Chelswu-ka tambac-lul malboro-lul piu-ess-ta.
Chelswu-nom cigarette-acc Marlboro-acc smoke-past-decl
'As for cigarettes, Chelswu smoked Marlboro.'

The aim of this paper is to provide an account for the inalienable possession relation between the two accusative case marked NPs that do not form a constituent. Section 2 shows the inadequacies of the possessor raising analysis. In Section 3, we propose an alternative analysis with a recursive VP structure. Section 4 serves as an introduction to material part-whole relations between eventualities, which will play a crucial role in our analysis. Section 5 provides compositional interpretations of the proposed structures. We also add a few extra constraints on event arguments to ensure the correct truth conditions are derived. Section 6 concludes the paper.

2 Against the Possessor Raising Analysis

There have been many attempts to explain the inalienable possession relation between two NPs by positing that the possessor and the possessee form a constituent at some level, and the possessor moves away from the base-generated position to some other position (Choe, 1986; Cho, 2000; among others). Based on the observation that there are two patterns, the ACC-ACC pattern in (1a), and the GEN-ACC pattern in (3), proponents of this analysis tried to derive (1a) from (3).

- (3) Vampire-ka Buffy-euy son-lul ttayli-ess-ta.
 vampire-nom Buffy-gen hand-acc hit-past-decl
 'The vampire hit Buffy's hand.'

The possessor raising analysis crucially relies on the assumption that the sentences in (1a) and (3) have the same meaning. As noted before (cf. Yoon, 2001), however, this assumption is incorrect. Imagine that a hand of Buffy's was amputated (i.e., physically detached), and the vampire hit that amputated hand. The GEN-ACC pattern in (3) can describe such a situation while the ACC-ACC pattern in (1a) is uniformly judged inappropriate. Thus, the semantic difference between the two patterns indicates that it is unlikely that they are derivationally related.

Idiomatic expressions provide further evidence against the derivational relation between (1a) and (3) (Yoon, 2001). Expressions such as *son-ul tae-ta* 'to touch something with the hand; to affect/spoil something', *son-ul po-ta* 'to see the hand; to deal with', etc. have idiomatic meanings with the ACC-ACC pattern, as in (4a). In contrast, the GEN-ACC pattern in (4b) does not have the idiomatic reading.

- (4) a. Chelswu-ka Sunhee-lul son-ul po-ass-ta.
 Chelswu-nom Sunhee-acc hand-acc see-past-decl
 literal 'Chelswu saw Sunhee's hand.'
 idiomatic 'Chelswu dealt with (punished) Sunhee.'
- b. Chelswu-ka Sunhee-euy son-ul po-ass-ta.
 Chelswu-nom Sunhee-gen hand-acc see-past-decl
 literal 'Chelswu saw Sunhee's hand.'
 *idiomatic 'Chelswu dealt with (punished) Sunhee.'

Under the possessor-raising analysis, we must assume that a syntactic movement can create an idiomatic reading. While it has often been debated whether idiomatic readings survive under movement, it has never been attested to our knowledge that an idiomatic reading is created as a result of movement. Furthermore, not all instances of the GEN-ACC pattern can feed into the ACC-ACC pattern. As (5) shows, the alienable possession cannot be expressed with the ACC-ACC pattern.

- (5) *Mary-ka John-ul cha-lul cha-ass-ta.
 Mary-nom John-acc car-acc kick-past-decl
 'Mary kicked John's car.'

The possessor raising approach would necessitate a kind of filter that prevents the alienable possession from undergoing raising. Otherwise, one must impose a semantic/thematic restriction on derived structure. Neither strategy seems to us particularly convincing or attractive. Therefore, we conclude that there is no derivational relation between the ACC-ACC pattern and the GEN-ACC pattern.³

3 The Recursive VP Structure

3.1 Basics

We would like to propose our analysis based on a very intuitive idea that both

³One can construct a more sophisticated analysis of possessor raising by assuming different thematic structure, and consequently different syntactic structure for the inalienable possession (Ura, 1996; Tsujioka, 2002). Under such an analysis, the inalienable possession structure can feed into possessor raising, while the ordinary possessive construction cannot. Therefore, the semantic non-equivalence observed above is explained. We believe, however, that even this sophisticated theory of inalienable possession is untenable. We regret that we cannot go further into this issue due to space restriction. See Tomioka and Sim (in progress) for discussion.

NPs are accusative-marked because both of them are 'objects'. The fact that both NPs can be relativized follows the intuition that both NPs are arguments.⁴

- (6) a. [Chelswu-ka t_i ppam-ul ttali-n] Sunhee;
 Chelswu-nom cheek-acc hit-Rel Sunhee
 'Sunhee who Chelswu hit her cheek'
 b. [Chelswu-ka Sunhee-lul t_i ttali-n] ppam;
 Chelswu-nom Sunhee-acc hit-Rel cheek
 'The cheek where Chelswu hit Sunhee'

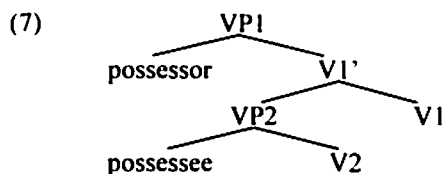
The two NPs, however, are not the arguments of the same verb. We propose that the IAP involves a recursive VP structure in which the possessor is the argument of the higher verb while the lower verb selects the possessee as its complement, as illustrated in (7).⁵

⁴It has been claimed that the possessee NPs cannot be relativized. For instance, *son* 'hand' in (i) is claimed to be interpreted as a part of *Chelswu*, but not *Sunhee*.

- (i) [Chelswu-ka Sunhee-lul (maktayki-lo) ttali-n] son
 Chelswu-nom Sunhee-acc stick-with hit-Rel hand
 a. W/O Instrumental PP: 'the hand with which Chelswu hit Sunhee' ←
preferred
 'the hand where Chelswu hit Sunhee'
 b. With Instrumental PP: 'the hand with which Chelswu hit Sunhee with a
 stick'
preferred → 'the hand where Chelswu hit Sunhee with a stick'

This claim, however, turned out to be an instance of a strong preference. By adding an instrumental phrase like *maktayki-lo* 'with a stick', the strong preference in (ia) becomes significantly weakened, and the opposite preference is observed in (ib).

⁵Cho, Dong-In (1992) proposes a structure superficially similar to ours based on the Larsonian VP Shell structure (Larson, 1988). In his analysis, the IAP is accounted for in terms of verb movement and compositional theta role assignment. The higher verb position is empty and the lexical verb moves to the empty position in the course of the derivation. The possessee is assigned its theta role by the lexical verb, while the theta role of the possessor is assigned by the verb and the possessee (VP2 in (7)). 'Affectedness' is involved in the assignment of a theta role to the possessor (cf. Yoon, 1989). His analysis, however, has difficulties in accounting for the full range of data, since the inalienable possession relation has to be imposed arbitrarily only to body-part nouns and their possessors. For instance, in (5), Mary may kick John's car in her effort to kick John. In this situation, John may be affected (i.e., was upset) by Mary's kicking the car. Yet, (5) is ungrammatical.



The questions that immediately arise are the following. What are the identities of those verbs when there is only one verb at the surface? How does this structure end up with the meaning that it has?

Let us begin with the first question. Here is one possible hypothesis.

(8) Hypothesis 1

The two verbs are identical. The lower verb deletes at PF under identity.

This hypothesis makes sense if one believes the following generalizations.

(9) The ACC-marked possessor NPs must bear the same relation to the verb as the ACC-marked possessee NPs do to the verb in IAP. (Choe, 1986)

(10) Conditioning Factor in Possessor Agreement (Cho, 2000:14)

V(Possessor-Possessee) → V(Possessor)

In (1a), for instance, the vampire's hitting Buffy's hand entails his hitting Buffy. In contrast, (5) shows that there is no such entailment between Mary's kicking John's car and Mary's kicking John. Therefore, *son* 'hand' in (1a) is accusative-marked, while *cha* 'car' in (5) is not.

The situation, however, is slightly more complicated, since there are sentences where the entailment condition is not observed.

3.2 Further Data and the Verb 'Affect'

In the following sentences, the possessors can have seemingly different theta roles from the theta roles that the possessee have. The closest thematic roles for the possessors are Source in (11a) and Goal in (11b).

(11)a. Source Interpretation

Leia-ka Yoda-lul meri-lul ppop-ass-ta.
 Leia-nom Yoda-acc hair-acc pull.out-past-decl
 'Leia pulled out Yoda's hair.'

b. Goal Interpretation

Annie-ka robot-lul phal-ul tal-ass-ta.
 Annie-nom robot-acc arm-acc attach-past-decl
 'Annie attached the arm to the robot.'

The sentences in (11) show that Hypothesis 1 cannot account for all the instances of the IAP multiple accusative pattern. Leia's pulling out Yoda's hair does not entail her pulling out Yoda, and Annie's attaching the robot's arm does not entail her attaching the robot.

Instead, these sentences obey the Affectedness Condition (Yoon, 1989).

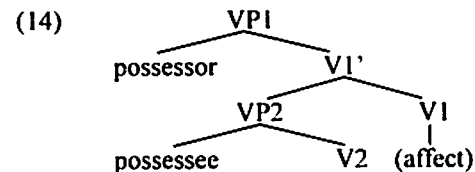
(12) The Affectedness Condition

The referent of the possessor is 'affected' by the action denoted by the possessee and the verb in IAP constructions.

As a result of pulling out the hair, Yoda lost his hair and as a consequence of attaching the arm, the robot has an arm. Therefore, both possessors are affected by the action denoted by the verb and the possessee. In light of these data, it is necessary to consider an alternative hypothesis.

(13) Hypothesis 2

The higher verb is a phonologically silent verb, affect, whereas the lower verb is a lexical verb.



We believe that the Entailment Condition should be subsumed under the Affectedness Condition. The verb *affect* has its own Theme role, to which the possessor NP corresponds thematically. The event description in the lexical meaning of *affect* is general and broad enough to be compatible with the meanings of the overt lexical verbs.⁶

⁶We are not completely satisfied with this hypothesis, since the sentence below behaves like the IAP, but there is not a clear sense of affectedness involved.

(i) Chelswu-ka Sunhee-lul elkul-ul po-ass-ta.
 Chelswu-nom Sunhee-acc face-acc see-past-decl
 'Chelswu saw Sunhee's face.'

4 Part-Whole Relations of Eventualities

Now that the syntactic structure of the IAP multiple accusative is established, we may move on to the second question: How does the structure in (14) end up with the meaning that it has? Since our syntax does not thematically link the possessor and the possessee, we need an alternative analysis to account for the inalienable possession interpretation. The main idea that we endorse is that the inalienable possession relation comes from a 'material' part-whole relation between eventualities in which the possessor and the possessee are contained. This section provides some basic concepts of part-whole relations between events.

The distinction between the 'material part-whole' relation and the 'individual part whole' relation is important in our proposal. The individual part-whole, or \subseteq relation, is based on a semi-lattice structure (Link, 1983). If there is a plurality of students, for instance, that plurality has plurality parts that are students, and singularity parts each of which is a student, and nothing else. A little more formally:

(15) For all X and P, if $*P(X)$, then $*P(x)$ for all $x \subseteq X$, where $*P$ is a property that can be true of pluralities and singularities.

The material part-whole, or \blacktriangleleft relation, on the other hand, is not based on the semi-lattice structure, and the principle stated above does not hold. For instance, Fred's left index finger is a material part of him, but it itself is not considered to be Fred.

The individual part-whole relation is also relevant to events (Krifka, 1989). For example, consider (16a). For this sentence to be true, there must have been two jumping-into-the-lake events, one by Fred and the other by Chris. The formal relations among these events can be characterized as in (16b). It is important to note that all the events in (16b) are jumping-into-the-lake events.

- (16) a. Fred and Chris jumped into the lake.
 b. e_1 = Fred jumped into the lake, e_2 = Chris jumped into the lake,
 $e_1 + e_2$ = Fred and Chris jumped into the lake ("+" means summation)

The judgment, however, varies from speaker to speaker, since it is ungrammatical for Cho (1993), a little bit marginal for Yoon (2001), and perfectly grammatical to our consultants. Moreover, Yoon (2001), the original advocate of the Affectedness Condition for Korean IAP, admits that we need to interpret the term 'affected' very liberally. Thus, we will stick to Hypothesis 2 for the time being.

$e_1 \subseteq$ Fred and Chris jumped into the lake

$e_2 \subseteq$ Fred and Chris jumped into the lake

The material part-whole between events is relevant to a case like (17). (17b) describes what Fred did when (17a) happened.

- (17)a. Fred cooked the curry.
 b. Fred heated pan, put in some oil, sautéed vegetables and meat, add water, and put in spices.
 $e_1 =$ Fred heated the pan $e_5 =$ Fred put in spices
 $e_1 \blacktriangleleft$ Fred cooked the curry $e_5 \blacktriangleleft$ Fred cooked the curry

The smaller events in (17b) are “bits and pieces” that comprise the event of Fred’s cooking the curry, and none of those events is an event of Fred’s cooking the curry all by itself. This kind of relation is what the material part-whole relation is designed to capture.

In some cases, the material part-whole relation between events corresponds to (or is “measured” in terms of) the material part-whole relations between entities (cf. Bach, 1986).

- (18)a. Fred drew a map of Japan.
 b. Fred drew a map of Kyushu.

Fred’s drawing a map of Kyushu is a material part of his drawing a map of Japan because Kyushu is a material part of Japan.

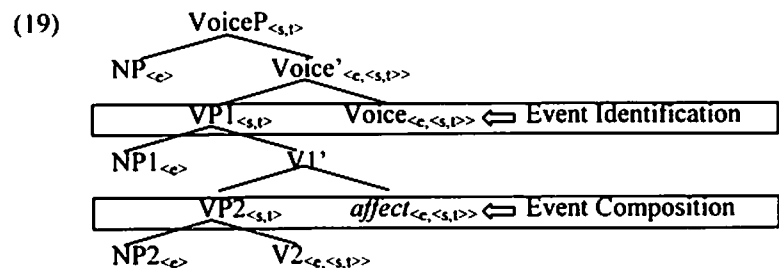
This is the insight we would like to appeal to. In other words, the inalienable possession interpretation does not come from the thematic part-whole relation between the part noun and the whole NP (i.e., Stockwell, et al., 1973) but is derived via the part-whole relation between eventualities in which the part and the whole are included.

5 Semantic Interpretation

5.1 Event Identification and Event Composition

Following Kratzer (1996), we assume that the Agent role is not the argument of a lexical verb but is introduced by the functional head Voice. A predicate like *hit* selects a Theme argument and an event argument. The phonologically silent verb *affect* has its own Theme argument and event argument, but, as our syntactic structure suggests, it syntactically selects a VP as its complement. With the Voice head selecting the VP headed by *affect*, the structure should

look like (19). This structure has two sites where Functional Application, the most common compositional rule, cannot apply. For those places, we employ Event Identification (Kratzer, 1996) and Event Composition (Brisson, 1998).⁷



The two compositional rules are shown below.

(20) Event Composition (Brisson, 1998; 156)

$$\begin{array}{ccc}
 f & g & \rightarrow & h \\
 \langle s, t \rangle & \langle e, \langle s, t \rangle \rangle & & \langle e, \langle s, t \rangle \rangle \\
 \lambda e. f(e) & \lambda x. \lambda e. g(x)(e) & & \lambda x. \lambda e. [g(x)(e) \ \& \ \exists e' [e' \triangleleft e \ \& \ f(e')]]
 \end{array}$$

(21) Event Identification (Kratzer, 1996:122)

$$\begin{array}{ccc}
 f & g & \rightarrow & h \\
 \langle e, \langle s, t \rangle \rangle & \langle s, t \rangle & & \langle e, \langle s, t \rangle \rangle \\
 & & & \lambda x_e. \lambda e_s. [f(x, e) \ \& \ g(e)]
 \end{array}$$

Brisson (1998) proposed the rule of Event Composition to interpret the distributive components of some collective predicates. In our analysis, it is used to combine the VP2 headed by an overt V and *affect*. Within itself, this rule has existential quantification over a material part event. After applying Event Composition to the sentences in (11), the pulling out the hair event and

⁷It has been claimed that verbs that denote (more or less) permanent relations, such as *alta* 'know', lack event arguments (Kratzer, 1995). Such verbs, however, do allow more than one NP to bear the accusative case marker.

(1) Na-nun pemin-ul elkul-ul a-n-ta.
 1sg-top criminal-acc face-acc know-pres-decl
 'I know the criminal's face.'

In constructions with these kind of verbs, however, kinship terms are allowed in the possessee positions, and predicate fronting with the verb and the possessee NP is not allowed, indicating that the syntactic and semantic properties are different from IAP. For details, see Tomioka and Sim (in progress).

the attaching the arm event are material parts of the affecting Theme events, as shown in (22).

(22) The application of Event Composition

- a. f: λe . [pull out (e) & Theme (e, the hair)]
- g: λy . λe . [affect (e) & Theme (e, y)]
- h: λy . λe . [affect (e) & Theme (e, y) & $\exists e'$ [$e' \triangleleft e$ & pull out (e') & Theme (e', the hair)]]
- b. f: λe . [attach (e) & Theme (e, the arm)]
- g: λy . λe . [affect (e) & Theme (e, y)]
- h: λy . λe . [affect (e) & Theme (e, y) & $\exists e'$ [$e' \triangleleft e$ & attach (e') & Theme (e', the arm)]]

Kratzer's Event Identification is one effective way to be compositional while maintaining a neo-Davidsonian way of introducing arguments. The result of the application of Event Identification that combines VP1 and the Voice head is shown in (23), and the final translations for the sentences in (11) are given in (24).

(23) The application of Event Identification

- a. λy . λe . [affect (e) & Agent (e, y) & Theme (e, Yoda) & $\exists e'$ [$e' \triangleleft e$ & pull out (e') & Theme (e', the hair)]]
- b. λy . λe . [affect (e) & Agent (e, y) & Theme (e, the robot) & $\exists e'$ [$e' \triangleleft e$ & attach (e') & Theme (e', the arm)]]

- (24) a. (11a) = a set of eventualities e such that e is affecting Yoda by Leia and there is e' such that $e' \triangleleft e$ and e' is pulling out the hair.
- b. (11b) = a set of eventualities e such that e is affecting the robot by Annie and there is e' such that $e' \triangleleft e$ and e' is attaching the hand.

In both cases, the possessor NPs are understood to be Themes. The impression that these possessors can have different thematic roles, such as Goal or Source, comes from semantic inference: If the *pulling-out-the-hair* event is a material part of the *affecting-Yoda* event, for instance, it is the most natural to interpret that Yoda was the source of the hair.

Whether the IAP relation holds before (e.g., *pull out*), after (e.g., *attach*) or during (e.g., *hit*) the event may also depend on the semantic inference from the verb meaning. However, we acknowledge the possibility that the VP that *affect* selects has more complex syntactic structure that reflects the actionsart of the lexical verb.

5.2 Restrictions on Event Arguments

Our semantics so far does not ensure that the correct interpretations are assigned. Consider the sentence in (11b), repeated as (25).

- (25)a. Annie-ka robot-lul phal-ul tal-ass-ta. (=11b)
 Annie-nom robot-acc arm-acc attach-past-decl
 'Annie attached the arm to the robot.'
- b. a set of eventualities *e* such that *e* is affecting the robot by Annie and there is *e'* such that *e'* ◀ *e* and *e'* is attaching the hand. (=24b)

Imagine the following scenario. There is this robot that has a sensor sensitive to human figures. When it sees a shape like a human, it reacts. Annie attaches arms to a mannequin, and now looking like a human, the mannequin triggers the robot's reaction. So, Annie affected the robot by attaching arms to a mannequin.

The IAP multiple accusative structure is never true in this kind of 'causative-like' situation. For this scenario to be true in our semantics, an eventuality of Annie's affecting the robot must (accidentally) contain a mannequin in addition to an arm and the robot. Thus, if we find a way to prevent such an irrelevant entity from being included, (25a) is false in this scenario.

This scenario is eliminated if we assume that VP1 denotes a set of **minimal** eventualities in the sense of Kratzer (1989) or eventualities that **exemplify the proposition** in the sense of Kratzer (2002). In this kind of eventuality, no irrelevant entities are included. So, the 'affecting the robot by Annie' event contains the robot and Annie and nothing else. Since the attaching the arm event is a material part of the affecting the robot event, a mannequin or an arm that is not a part of the robot cannot exist in it.

The second scenario is a little more complicated. Assume the same robot. Annie, an android, attaches an arm to herself, triggering the robot's sensor to react. So, Annie affected the robot by attaching an arm to herself.

The sentence is still judged to be false in the second scenario, but in this case, no irrelevant entities are in a material-part eventuality. To block this scenario, one might suggest that the part-whole relation be imposed locally. If the theme in a material part eventuality is a part of the agent, the material part-whole relation does not hold with a set of eventualities that are associated with *affect* because, when *affect* is combined with the VP, the Agent role is yet to be introduced.

The same result can be achieved with an alternative solution: Imagine that an entity A is in *e*, and entity B is in *e'* such that *e'* ◀ *e*. In that case, A can be a

material part of B only if the expression for A and that for B bear the same thematic role. As far as the individual part-whole relation is concerned, Krifka (1989) proposed a principle that ensures the effect of obligatory sharing of a thematic role between parts and wholes (his Mapping of Objects/Events in Krifka, 1989:92). Extending this idea to material part-whole relations is, however, very tricky. Imagine (26).

(26) For any thematic relation R, eventualities e, e', and individual x,
 $[R(e, x) \& R(e', y) \& e' \triangleleft e] \rightarrow y \triangleleft x$

If (26) holds, then, (25a) is correctly predicted to be false under the second scenario. The event of attaching the arm is a material part of Annie's affecting the robot. Then, only the two Themes (the arm and the robot) can have a part-whole relation.

The problem is, however, that (26) does not seem to work for Themes. As noted by Krifka (1986) and extensively discussed by Kratzer (forthcoming), the Agent role is summative/cumulative but the Theme role isn't. Consider the sentence in (27a), assuming that the actual planting event is divided into the three subevents in (27b).

- (27)a. Abby, Molly and Sally planted this tree. (Collective reading)
 b. What really happened: Abby dug a hole, Molly carried the tree and placed it in the hole, and Sally put some soil in the hole.

Under the collective reading of (27a), the conjoined subject denotes a group of individuals consisting of Abby, Sally, and Molly, and each person is considered to be a material part of the group agent (cf. Landman, 1995). Once we combine the three Agents of the three material part events in (27b), we do get the correct Agent of the whole event; the group of Abby, Molly, and Sally. However, it is obvious that the same strategy does not work for the Theme arguments. If we add up the three Themes of the part events (i.e., a hole, the tree, and the soil), we do not get the Theme of the whole event (i.e., this tree).

One way to make (26) suitable for our purpose, however, is to put an extra restriction on eventualities. If (at least) e is minimal or is an eventuality that exemplifies a proposition, then, it probably works.

(26') For any thematic relation R, eventualities e, e', and individual x, y
 $[R(e, x) \& R(e', y) \& \text{MIN}(e) \& e' \triangleleft e] \rightarrow y \triangleleft x$

(26') is not meant to cover the aforementioned planting situation in (27). The actual planting took place in the way that (27b) describes, and those

mini-events in (27b) are material parts of the actual event. However, once we restrict our attention to the minimal event of Abby, Molly, and Sally's planting this tree, no material parts of such an event can include the soil or the hole. Although it is not clear to us at this point whether a principle like (26') is motivated independently of the inalienable possession, it at least provides a systematic way to eliminate the theta role mismatch between a whole and its part.

6 Conclusion

We have proposed a new lexical decomposition analysis for the inalienable possession construction in Korean. The inalienable possession interpretation has its root in the material part-whole relation between events, rather than in the direct thematic relation between the whole and the part NPs, and this semantic relation is realized syntactically as recursive VP structure. It seems that our analysis can be neatly extended to the IAP in Bantu languages like Swahili (Keach and Rochemont, 1992) and Sotho (Voeltz, 1976) which show strikingly similar patterns.

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